REMARKS

This Reply and Amendment is intended to be completely responsive to the non-final Office Action dated April 21, 2008. Claims 1-6, 8, 10-23, 25-27, 29-40, 42-61 are pending in this Application and currently stand rejected. Previously withdrawn Claims 59-61 have been canceled without prejudice to further prosecution on the merits. Claims 7, 9, 24, 28 and 41 were previously canceled without prejudice to further prosecution on the merits. New independent Claims 62-64 have been added to more particularly claim subject matter that was tested by the Applicants and demonstrated to provide unexpected results.

The Applicants respectfully request reconsideration of the present Application in view of the foregoing amendments and in view of the reasons that follow.

Claim Rejections - 35 U.S.C. § 112 ¶ 2

Claims 25-27 and 29-36:

On page 2 of the Detailed Action, Claims 25-27 and 29-36 were rejected under 35 U.S.C. § 112, second paragraph as being incomplete for omitting essential structural cooperative relationships. The Examiner contends that the structural relationship of the electrodes and light detector and/or transparent portion is unclear.

Independent Claims 25 and 31 have been amended to recite a relationship between the elements (i.e. "the counter electrode is disposed adjacent to the working electrode and the light detector and/or the transparent portion").

Accordingly, the Applicants submit that the rejection under 35 U.S.C. § 112, second paragraph has been overcome, and respectfully request withdrawal of the rejection and reconsideration and allowance of independent Claims 25-27 and 29-36.

Claim Rejections – 35 U.S.C. § 103

All of the pending claims have been rejected under 35 U.S.C. § 103(a) in view of various references as discussed and addressed below in greater detail. The Applicants note that on page 14 of the Detailed Action, the Examiner stated that the "Applicant may supply evidence that points to a criticality of such alloy compositions that renders such modifications unobvious, or supply evidence which shows unexpected results arise when such alloys are chosen."

The Applicants submit that such evidence was presented in detail in the originally filed specification and is reproduced below, and respectfully request reconsideration of the rejections under 35 U.S.C. § 103(a) in view of such evidence, and the other reasons that follow.

Evidence that Shows Unexpected Results Arise When the Alloys are Chosen

The results of testing show that the results of the claimed subject matter was greater than those which would have been expected from the prior art to an unobvious extent, and provide a significant and practical advantage, as required by M.P.E.P. 716.02(a).

Referring to "Example II" in the originally filed specification, the Applicants reported evidence of unexpected results flow cells having counter and working electrodes of Pt-10%Ir, when compared to the prior art Pt electrodes.

The Applicants reported their findings that:

> [0062] During operation of an ECL flow cell incorporating working and counter electrodes made of pure platinum (Pt), both electrodes may deteriorate significantly over time due to etching of the exposed surfaces of the electrodes. Such etching is a major limiting factor upon the operational lifetime of a flow cell. Flow cells have also been observed, in some configurations, to exhibit a downward drift in detected ECL signal and a rise in background signal over the lifetime of the flow cell. Under certain circumstances, the downward drift in signal has been observed to be as much as 10% of the initial signal levels over the course of approximately 2900 measurements. Applicants hypothesize that this downward drift is related to the etching process.

[0063] To compensate for such drift, an ECL instrument will need to be recalibrated, have its measurements normalized over the lifetime of the flow cell or have the electrode(s) or flow cell replaced at regular intervals.

[0064] Test data indicates that oxidation of the electrode is the primary cause of etching and it is postulated that a significant percentage of the electrode etching observed occurs during the processes of cleaning and regenerating the electrodes between measurements. In particular, in instruments for conducting magnetic bead-based assays, high electric potentials are used to clean the beads from the surface of the working electrode. The application of high potentials during a cleaning cycle causes platinum oxides' to form on the surface of the electrodes. These platinum oxides are loosely bound to the surface and are believed to be released into solution and washed away by cleaning reagent during the cleaning cycle.

[0065] Moreover, it has been observed that the Pt dissolved by oxidation may subsequently accumulate or otherwise deposit at locations within the flow cell. When the platinum oxides collect at locations in the optical path between the working electrode and the light detector, e.g., on the optical window, a reduction in light collection efficiency results. Applicants hypothesize that such deposition is one of the causes of ECL signal drift.

The Applicants further stated that:

[0073] According to an embodiment of the present invention, certain Pt alloys have been identified as suitable replacements for Pt working electrodes or counter electrodes in ECL flow cells. Surprisingly, it has been discovered that alloys of transition elements with Pt have electrochemical properties very similar to Pt but have advantages over pure Pt when used in ECL devices. These advantages have been found to include improved resistance to electrochemical etching, reduced drift in ECL signal, reduced carryover and longer electrode operational lifetime. Preferably, the Pt alloys comprise Pt combined with a second transition element that is present at a weight percentage of 1-50%, more preferably 5-50%, more preferably 10-30%, and most preferably approximately 10%. Suitable alloys for ECL electrodes are alloys of Pt with Ni, Pd, Co, Fe, Ru, Os, Cr, Mo, Zr, Nb, Ir, Rh, or W; more preferably, alloys of Pt with Ir, Rh or W; and, most preferably, alloys of Pt with Ir.

To support their findings, the Applicants presented the following evidence of the unexpected results of their testing under Example II:

[0130] B. Electrode Performance: The average ECL signal obtained with PC beads on the Ir electrode was only about 3 times the background signal. Presumably, the low signal resulted from the very small separation in the oxidation potentials for TPA and water on the Ir electrode. Applicants hypothesize that oxygen or another product of water oxidation may interfere with the generation of ECL. Despite the presence of Ir in the metal alloy, Pt-10% Ir electrodes performed similarly to Pt electrodes in terms of signal and signal to background (the mean signal obtained using PC beads was about 10% higher with Pt-10% Ir but there was overlap between the distributions of the measured signals). The electrochemical currents measured during sample excitation were comparable for the two materials.

[0131] … . There was a gradual decrease in, sensitivity over time with Pt electrodes; the sensitivity for Pt--Ir electrodes was unchanged over the course of the study.

[0132] C. Resistance Of The Electrodes To Etching: FIGS. 4A-4F show photographs of the Pt and Pt--Ir electrodes after the 100 plate study (approximately 10,000 measurements). Photographs are shown for platinum (FIGS. 4A-4C) and Pt-10% Ir (FIGS. 4D-4F) electrodes. Prior to the study both electrodes were optically smooth. The Pt working electrode (FIGS. 4A and 4B) and counter electrode (FIG. 4C) were both etched more than the corresponding Pt--Ir working electrode (FIGS. 4D and 4E) and counter electrode (FIG. 4F). Photographs include pictures of the whole working electrode surfaces (FIGS. 4A and 4D), magnified pictures of the working electrode region under the counter electrode on the inlet side of the flow cell (FIGS. 4B and 4E) and magnified pictures of the counter electrode on the outlet side of the flow cell (FIGS. 4C and 4F). The four parallel bars in FIG. 4C are not part of the counter electrode but show a brass shield (for the light detector) on the cell chamber wall.

FIG. 4A

FIG. 4D

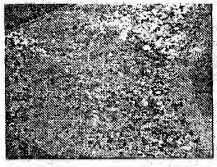


FIG. 4B

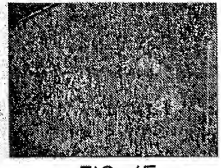


FIG. 4E

FIG. 4C

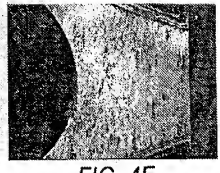


FIG. 4F

[0133] Comparison of the photographs reveal that the etching was much more severe on the counter electrodes than on the working electrodes. The etching on the working electrodes was most severe in the regions under the counter electrode. It is believed that such disparity in etching is due to non-uniformity in the current distribution during the cleaning cycle.

[0134] Waste solution from the cleaning cycle was collected and the levels of Pt and Ir were measured by atomic absorbance (AA). The Pt and Ir concentrations for the flow cell with the Pt--Ir electrodes were 60 ppb and 0.2 ppb respectively. Previous work has shown that the Pt concentration from Pt flow cells is in the 200-300 ppb range, confirming that the Pt electrode was etched to a greater extent (by a factor of 3 to 5) than the Pt-0% Ir electrode. By way of confirmation, profilometry studies have also shown that Pt electrodes show both greater loss of material as well as higher root mean square (RMS) roughness after the measurement of 12,000 samples.

[0135] D. The Effect of Electrode Composition on ECL Signal Drift: FIGS. 5 and 6 show, respectively, the drift in average ECL signal for positive control measured in the 100 plate study of Pt--Ir and Pt electrodes (the points represent average positive control signals on the "carryover" plates). The drift with Pt--Ir electrodes (FIG. 5) was a factor of 3 less than with Pt (FIG. 6). In both Figures, a similar effect was observed when comparing the average drifts in the pilot study using the M8 instrument.

FIG. 5

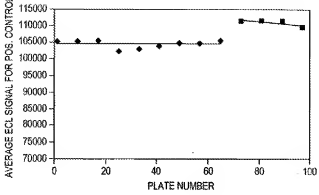
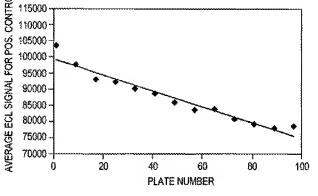


FIG. 6



[0136] The increase in signal at plate 73 in FIG. 5 is attributed to the replacement of the TPA Assay Buffer container with a newly-opened container. The intra-plate variability (i.e., the coefficient of variance of the signal for positive calibrator) was also consistently lower with Pt--Ir electrodes.

[0137] The reduction in drift is consistent with the lower amount of etching of the Pt--Ir electrodes described in the previous section. One possible explanation for such drift is that platinum released from the counter electrode deposits on the acrylic optical window through which light is collected. Over time, this deposit results in clouding of the optical window and reduces light collection efficiency.

[0138] E. The Effect of Electrode Composition on Signal Carryover: Signal carryover refers to the increase in background signal in a measurement that results from the incomplete removal of FCL labels from previous runs. It generally results because of trapped beads in the fluidics upstream of the flow cell or because of incomplete cleaning of beads on the working electrode from the previous sample. It reduces the dynamic range of an assay and can also result in false positives in a clinical setting.

[0139] Carryover was measured using the "carryover plate" format. Carryover was calculated in parts per million (ppm), by subtracting the mean negative control signal in the absence of carryover (i.e., the average of the signal from columns 2-4 of the carryover plate) from the negative control signal in the presence of carryover (i.e., in a negative control well measured directly after a positive control well, e.g., columns 6, 8, 10 or 12 of the carryover plate), dividing the difference by the positive control signal, and multiplying by a million. For example, the carryover for a well in column 6 is CO.sub.6=(NC.sub.6-NC.sub.mean)/PC.sub.5*1e6.

[0140] The average carryover that was observed under the experimental conditions described earlier was about a factor of 2 lower with Pt--Ir electrodes (approximately 250 ppm) when compared to Pt electrodes (approximately 500 ppm). The carryover also increased gradually for the Pt electrodes over time. The observed result is consistent with the higher root-mean-square (RMS) roughness, after use, for the Pt electrodes (1.4 μm) vs. the Pt/Ir electrodes (0.3 μm). The roughness is comparable to the bead diameter and it is thought that the uneven surface could cause additional bead traps in which beads collected resulting in the increased carryover that was observed.

[0141] F. Effect of the Decontamination Procedure: The decontamination procedure is a maintenance procedure used to clean and sterilize the instrument fluidics. The decontamination procedure was carried out between each plate. The results of the accelerated decontamination study are shown for Pt-10% Ir (FIG. 7A) and Pt (FIG. 7B) electrodes. Each point represents an average of 12-20 positive calibrator measurements obtained using 3-5 flow cells (i.e., 4 points

per flow cell per plate). From these results, it is apparent that there was a much greater drift with Pt electrodes (by about a factor of five) than with Pt--Ir electrodes, indicating that the Pt--Ir electrode was less affected by this decontamination procedure.

FIG. 7A

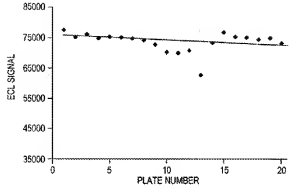
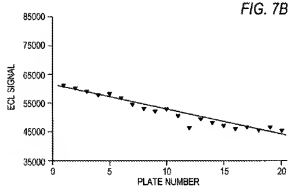


FIG. 7B

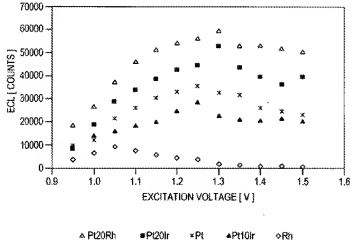


Accordingly, the Applicants respectfully submit that the evidence presented in the original specification demonstrates unexpected results over the prior art for an ECL flow cell having an electrode material of Pt-10% Ir. With respect to other electrode materials, the Applicants stated:

> [0154] D. ECL Measurements: The ability of Pt-20% Rh, Pt-10% Ir and Pt-30% Ir to act as working electrodes for ECL generation was confirmed by measuring the ECL induced at these electrodes in the presence of a 5 nM solution of free Ru(II)(bpy).sub.3 in TPA Assay Buffer. FIG. 15 shows the measured ECL as a function of the working electrode potential. Both alloys gave ECL intensities that were close to or better than those of pure Pt despite the high

concentrations of Rh and Ir in the alloys. FIG. 15 also shows that, as expected, Rh was also useful as an electrode for generating ECL although the ECL intensities were somewhat lower than those observed for the other materials. The lower ECL intensities may be due to the lower currents observed on Rh electrodes for TPA and Ru(II)(bpy).sub.3 oxidation as well as the lower potential required for water oxidation.

FIG. 15



The Applicants respectfully submit that the evidence of unexpected results presented in the original specification demonstrates results greater than were expected by the prior art electrode material by an unobvious extent, and that the results are of significant and practical advantage for use in ECL flow cells.

New Claims

New independent Claims 62-64 have been added to provide claims that more particularly recite the subject matter that Applicants have demonstrated provide unexpected results that are unobvious in view of the prior art devices (i.e. Pt electrodes) in an ECL flow cell.

New independent Claim 62 recites an electrode comprising 90% platinum and 10% iridium as tested and reported under Example II.

New independent Claim 63 recites an electrode comprising 70% platinum and 30% iridium as tested and reported under Example V.

New independent Claim 64 recites an electrode comprising 80% platinum and 20% rhodium as tested and reported under Example V.

Accordingly, the Applicants respectfully submit that new independent Claims 62-64 are patentable in view of the cited references, and respectfully request consideration and allowance of new Claims 62-64.

Claims 1-6, 8, 22, 23, 37-40, 42-53 and 56-58 over Niyami in view of Pike:

On page 4 of the Detailed Action, the Examiner rejected Claims 1-6, 8, 22, 23, 37-40, 42-53 and 56-58 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,993,740 ("Niyama") in view of U.S. Patent No. 5,591,321 ("Pyke").

The Examiner stated that Niyama discloses an electrochemiluminescence cell that includes a working electrode, counter electrode, window and light sensor. In addition, he stated other components of Niyama's cell, but points out that Niyama does not disclose electrodes of platinum alloys or iridium alloys. Office Action at p. 5. The Examiner asserted that Pyke discloses a platinum alloy with an amount of iridium from 5 to 50% weight, as well as 10 to 30%, and an iridium alloy with an amount of platinum from 5 to 50%. The Examiner concluded that it would have been obvious to modify Niyama to include an electrode of platinum/iridium alloy as taught by Pyke.

The Applicants respectfully traverse this rejection.

Pyke relates to a fault-detector for electrical transformers having a Pt/Ir sensor.

Niyama does not discuss this element at all. Additionally, the list of permissible alloys discussed in Niyama does not contain any broadening language-instead it only lists specific metals and indicates that alloys of those metals can be used. It does not say "metals such as," "metals including," "and the like," "and other similar metals," or anything of that nature. Reading Niyama would lead the skilled artisan to believe that he or she must choose from the short list of 6 metals and corresponding alloys thereof.

Independent Claim 1:

Independent Claim 1 was previously amended to recite an electrode comprising a "platinum alloy" with a "first predetermined weight percent of platinum" and a "second predetermined weight percent of an element other than platinum or rhodium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%."

The Applicants submit that an "electrochemiluminescence cell" comprising, in combination with other elements, an electrode comprising a "platinum alloy" with a "first predetermined weight percent of platinum" and a "second predetermined weight percent of an element other than platinum or rhodium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%" as required by Claim 1 (as amended) is not disclosed, taught or suggested by Niyami, alone or in any proper combination with Pyke.

The Applicants respectfully submit that the suggestion to make the combination of Niyami and Pyke would involve hindsight using the Applicants' own disclosure. To transform the cell of Niyami, alone or in any proper combination with the electrical transformer fault detector of Pyke, into the subject matter recited by independent Claim 1 would require still further modification, and such modification is taught only by the Applicants' own disclosure.

Further, the Applicants respectfully submit that evidence of unexpected results of the subject matter of Claim 1 (e.g. Pt/Ir alloy electrode) and presented in the original specification demonstrates that the results were greater than those which would have been expected from the prior art (i.e. Pt electrodes) to an unobvious extent, and that the results are of a significant, practical advantage in the field of ECL flow cells. The Applicants believe that the evidence represents a strong indicia of non-obviousness that outweighs the evidence of obviousness as presented by the Examiner, and respectfully request withdrawal of the rejection, and reconsideration and allowance of independent Claim 1 (and dependent Claims 2-6, 8 and 10-19 as they depend from independent Claim 1).

Independent Claim 22:

Independent Claim 22 was previously amended to recite an electrode comprising a "iridium alloy" with a "first predetermined weight percent of iridium" and a "second predetermined weight percent of an element other than iridium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%."

The Applicants submit that an "electrochemiluminescence cell" comprising, in combination with other elements, an electrode comprising a "iridium alloy" with a "first predetermined weight percent of iridium" and a "second predetermined weight percent of an element other than iridium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%" as required by Claim 22 (as amended) is not disclosed, taught or suggested by Niyami, alone or in any proper combination with Pyke.

The Applicants respectfully submit that the suggestion to make the combination of Niyami and Pyke would involve hindsight using the Applicants' own disclosure. To transform the cell of Niyami, alone or in any proper combination with the electrical transformer fault detector of Pyke, into the subject matter recited by independent Claim 1 would require still further modification, and such modification is taught only by the Applicants' own disclosure.

Further, the Applicants respectfully submit that evidence of unexpected results of the subject matter of Claim 1 (e.g. Ir/Pt alloy electrode) and presented in the original specification demonstrates that the results were greater than those which would have been expected from the prior art (i.e. Pt electrodes) to an unobvious extent, and that the results are of a significant, practical advantage in the field of ECL flow cells. The Applicants believe that the evidence represents a strong indicia of non-obviousness that outweighs the evidence of obviousness as presented by the Examiner, and respectfully request withdrawal of the rejection, and reconsideration and allowance of independent Claim 1 (and dependent Claims 2-6, 8 and 10-19 as they depend from independent Claim 1).

Independent Claim 37:

Independent Claim 37 was previously amended to more particularly recite the steps of a method of conducting an electrochemiluminescence assay.

Independent Claim 37 recites an electrode comprising a "platinum alloy" with a "first predetermined weight percent of platinum" and a "second predetermined weight percent of an element other than platinum" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%."

The Applicants submit that an "electrochemiluminescence cell" comprising, in combination with other elements, an electrode comprising a "platinum alloy" with a "first predetermined weight percent of platinum" and a "second predetermined weight percent of an element other than platinum or rhodium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%" as required by Claim 37 (as amended) is not disclosed, taught or suggested by Niyami, alone or in any proper combination with Pyke.

The Applicants respectfully submit that the suggestion to make the combination of Niyami and Pyke would involve hindsight using the Applicants' own disclosure. To transform the cell of Niyami, alone or in any proper combination with the electrical transformer fault detector of Pyke, into the subject matter recited by independent Claim 37 would require still further modification, and such modification is taught only by the Applicants' own disclosure.

Further, the Applicants respectfully submit that evidence of unexpected results of the subject matter of Claim 37 (e.g. Pt/Ir alloy electrode) and presented in the original specification demonstrates that the results were greater than those which would have been expected from the prior art (i.e. Pt electrodes) to an unobvious extent, and that the results are of a significant, practical advantage in the field of ECL flow cells. The Applicants believe that the evidence represents a strong indicia of non-obviousness that outweighs the evidence of obviousness as presented by the Examiner, and respectfully request withdrawal of the rejection, and reconsideration and allowance of independent Claim 37 (and dependent Claims 38-40 and 42-53 as they depend from independent Claim 37).

Independent Claim 54:

Independent Claim 54 was previously amended to more particularly recite the steps of a method of conducting an electrochemiluminescence assay.

Independent Claim 54 recites an electrode comprising a "rhodium alloy" with a "first predetermined weight percent of rhodium" and a "second predetermined weight percent of an element other than rhodium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%."

The Applicants submit that an "electrochemiluminescence cell" comprising, in combination with other elements, an electrode comprising a "rhodium alloy" with a "first predetermined weight percent of rhodium" and a "second predetermined weight percent of an element other than rhodium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%" as required by Claim 54 (as

amended) is not disclosed, taught or suggested by Niyami, alone or in any proper combination with Pyke.

The Applicants respectfully submit that the suggestion to make the combination of Niyami and Pyke would involve hindsight using the Applicants' own disclosure. To transform the cell of Niyami, alone or in any proper combination with the electrical transformer fault detector of Pyke, into the subject matter recited by independent Claim 54 would require still further modification, and such modification is taught only by the Applicants' own disclosure.

Further, the Applicants respectfully submit that evidence of unexpected results of the subject matter of Claim 54 (e.g. Rh/Pt alloy electrode) and presented in the original specification demonstrates that the results were greater than those which would have been expected from the prior art (i.e. Pt electrodes) to an unobvious extent, and that the results are of a significant, practical advantage in the field of ECL flow cells. The Applicants believe that the evidence represents a strong indicia of non-obviousness that outweighs the evidence of obviousness as presented by the Examiner, and respectfully request withdrawal of the rejection, and reconsideration and allowance of independent Claim 54 (and dependent Claim 55 as it depends from independent Claim 54).

Claims 20 and 21 over Niyami in view of Chang:

On page 5 of the Detailed Action, the Examiner rejected Claims 20 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Niyama in view of U.S. Patent No. 5,973,443 ("Chang").

The Examiner stated that Chang discloses an Ir-Rh electrode used to minimize erosion and wear resistance.

Chang disclose a spark plug electrode for an internal combustion and is entirely distinct from an electrode used in a flow cell to measure ECL.

Independent Claim 20:

Independent Claim 20 (as amended) recites an electrode comprising a "rhodium alloy" with a "first predetermined weight percent of rhodium" and a "second predetermined weight percent of an element other than rhodium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%."

The Applicants submit that an "electrochemiluminescence cell" comprising, in combination with other elements, an electrode comprising a "rhodium alloy" with a "first predetermined weight percent of rhodium" and a "second predetermined weight percent of an element other than rhodium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%" as required by Claim 1 (as amended) is not disclosed, taught or suggested by Niyami, alone or in any proper combination with Chang.

The Applicants respectfully submit that the suggestion to make the combination of Niyami and Pyke would involve hindsight using the Applicants' own disclosure. To transform the cell of Niyami, alone or in any proper combination with the spark plug of Chang, into the subject matter recited by independent Claim 20 would require still further modification, and such modification is taught only by the Applicants' own disclosure.

Further, the Applicants respectfully submit that evidence of unexpected results of the subject matter of Claim 20 (e.g. Rh/Pt alloy electrode) and presented in the original specification demonstrates that the results were greater than those which would have been expected from the prior art (i.e. Pt electrodes) to an unobvious extent, and that the results are of a significant, practical advantage in the field of ECL flow cells. The Applicants believe that the evidence represents a strong indicia of non-obviousness that outweighs the evidence of obviousness as presented by the Examiner, and respectfully request withdrawal of the rejection, and reconsideration and allowance of independent Claim 20 (and dependent Claim 21 as it depends from independent Claim 1).

Claims 25-27 and 29-36 in view of Niyama, Pyke and Wohlstadter:

On page 6 of the Detailed Action, the Examiner rejected Claims 25-27 and 29-36 under 35 U.S.C. § 103(a) as being unpatentable over Niyama in view of Pyke and U.S. Patent No. 6,207,369 ("Wohlstadter").

The Applicants respectfully traverse this rejection.

Independent Claim 25:

Independent Claim 25 (as amended) recited an "electrochemiluminescence cell" including, in combination with other elements, a "field extending element" that "reduces the electrochemiluminescence incident upon said transparent portion by an amount greater than 0% and less than 50%."

The Applicants submit that an "electrochemiluminescence cell" comprising, a "field extending element" that "reduces the electrochemiluminescence incident upon said transparent portion by an amount greater than 0% and less than 50%" as required by Claim 25 (as amended) is not disclosed, taught or suggested by Niyami, alone or in any proper combination with Pyke and/or Wohlstadter.

The Applicants respectfully submit that the suggestion to make the combination of Niyami and Pyke would involve hindsight using the Applicants' own disclosure. To transform the cell of Niyami, alone or in any proper combination with the electrical transformer fault detector of Pyke, or Wohlstadter into the subject matter recited by independent Claim 22 would require still further modification, and such modification is taught only by the Applicants' own disclosure.

Accordingly, the Applicants respectfully submit that the rejection under 35 U.S.C. § 103 has been overcome and, and request withdrawal of the rejection and reconsideration and allowance of independent Claim 25 (as amended) and dependent Claims 26-27 and 29-30 as they depend from Claim 25.

Independent Claim 31:

Independent Claim 31 was previously amended. The Examiner stated that Wohlstadter discloses the use of a waveform generator/potentiostat as a source of electrical energy. However, Wohlstadter does not teach or describe the limitation "capable of maintaining said counter electrode at a substantially constant ground potential or at a potential that does not vary relative to a potential of said light detector", which is advantageous for reducing the noise component of the signal produced by the light detector during an ECL measurement that results from capacitive coupling of the electrodes to the light detector.

Accordingly, the Applicants respectfully submit that the rejection under 35 U.S.C. § 103 has been overcome and, and request withdrawal of the rejection and reconsideration and allowance of independent Claim 31 (as amended) and dependent Claims 32-36 as they depend from Claim 31.

Claims 54-55 in view of Niyama and Crane:

On page 8 of the Detailed Action, the Examiner rejected Claims 54-55 under 35 U.S.C. § 103(a) as being unpatentable over Niyama in view of U.S. Patent No. 3,784,928 ("Crane").

Crane discloses an electrode for a CO2 laser.

The Applicants respectfully traverse this rejection.

Independent Claim 54:

Independent Claim 54 was previously amended to more particularly recite the steps of a method of conducting an electrochemiluminescence assay.

Independent Claim 54 recites an electrode comprising a "rhodium alloy" with a "first predetermined weight percent of rhodium" and a "second predetermined weight percent of an element other than rhodium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%."

The Applicants submit that an "electrochemiluminescence cell" comprising, in combination with other elements, an electrode comprising a "rhodium alloy" with a "first predetermined weight percent of rhodium" and a "second predetermined weight percent of an element other than rhodium" where the "first predetermined weight percent is greater than zero" and the "second predetermined weight percent is from 5% to 50%" as required by Claim 54 (as amended) is not disclosed, taught or suggested by Niyami, alone or in any proper combination with Crane.

The Applicants respectfully submit that the suggestion to make the combination of Niyami and Crane would involve hindsight using the Applicants' own disclosure. To transform the cell of Niyami, alone or in any proper combination with the CO2 laser of Crane, into the subject matter recited by independent Claim 54 would require still further modification, and such modification is taught only by the Applicants' own disclosure.

Further, the Applicants respectfully submit that evidence of unexpected results of the subject matter of Claim 54 (e.g. Rh/Pt alloy electrode) and presented in the original specification demonstrates that the results were greater than those which would have been expected from the prior art (i.e. Pt electrodes) to an unobvious extent, and that the results are of a significant, practical advantage in the field of ECL flow cells. The Applicants believe that the evidence represents a strong indicia of non-obviousness that outweighs the evidence of obviousness as presented by the Examiner, and respectfully request withdrawal of the rejection, and reconsideration and allowance of independent Claim 54 (and dependent Claim 55 as it depends from independent Claim 54).

Rejection over Liljestrand, in view of Niyama, Pyke, and Kovacs

On page 9 of the Detailed Action, Claims 1-6, 8, 10-19, 22, 23, 25-27, 30-40, 42-53 and 56-58 were rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,200,531 ("Liljestrand") in view of Niyama, Pyke, and U.S. Patent No. 5,965,452 ("Kovacs").

The Applicants respectfully traverse this rejection.

Independent Claim 1 and 22:

Independent Claims 1, 22, 25, 31, 37, and 56 have been amended to recite a combination of subject matter that the Applicants believe is patentable in view of the cited references (as previously described). The Applicants submit that Claims 1 and 22 are also patentable over the combination of Niyama, Pyke, and Liljestrand for the same reasons.

The Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 103(a), and reconsideration and allowance of independent Claims 1, 22, 25, 31, 37, and 56 (as amended) and their respective dependent claims.

* * *

The Applicants respectfully submit that each and every outstanding rejection to the pending claims has been overcome, and that the Application is in condition for allowance. The Applicants respectfully request reconsideration and allowance of pending Claims 1-6, 8, 10-23, 25-27, 29-40, 42-58 and new independent Claims 62-64.

The Examiner is encouraged to contact the undersigned by telephone if the Examiner believes that a telephone interview would advance the prosecution of the present Application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, the Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date July 17, 2008

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